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The Universe and
its Evolution.

By
S. J. Silberstein.

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From Prof. John Dewey
Dec. 12, 1894

THE UNIVERSE AND ITS EVOLUTION.

A NEW THEORY ON THE EXISTENCE OF THE UNIVERSE, THE CAUSATION OF ITS ORIGIN — and — ITS ORDERLY DEVELOPMENT

BY

S. J. SILBERSTEIN.

NEW YORK.

1891.

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46 CANAL ST., N. Y.

To

Prof. EDWIN R. A. SELIGMAN,

—— AND ——

ISAAC ADLER, M. D.,

to whom

I am indebted for so many kindnesses and support,

I DEDICATE THIS BOOK.

The Author.

R. [illegible] 11/1. 2-7-38

A COMMENT TO THE READER

by

MAURICE J. BURSTEIN, M. D.

This small pamphlet, ,,The Universe and its Evolution," by Mr. S. J. Silberstein, is a very short extract from his work in Hebrew, which embraces in itself a complete cosmic theory.

I do not come here as a criticist to express my opinion upon the excellence of the work or the correctness of his theory.

The author has andeavored to prove that the science of to-day is based upon false premises. He annihilates the theory of the law of gravitation, the first and fundamental law in nature, which is based upon mathematics and astronomy, and shows that gravitation is but a mythological mysticism.

In the same way he treats of Inertia, many established laws of motion, the theory of the ether, &c. He opposes the philosophy of Spinoza, Leibnitz and others, and out of all these demolished theories, he gathers material and originates a new cosmic theory, by means of which all obscure accidents in nature at the beginning of the creation should be explained and

all questions should be answerable in a logical manner. Upon this subject, the author claims to have arrived at the only correct idea, by which the problem of the universe and its creation can be solved.

I cannot, for a moment, pass any opinion upon its correctness. I should rather be pleased to hear the opinions of the great scientists of to-day, and I sincerely request both the scientist and naturalist to read this pamphlet with a preferential attention, and give a just and impartial opinion as to the ideality of this work.

Is a man able to solve the problem of the nature as Mr. Silberstein has, confessing as he does, that a naturalist has no right to make laws in nature as long as he is not able to detect its mysteries, and that all laws based upon mathematical calculations and experiments may be correct only as far as mechanics goes, but not as natural laws, as long as they do not satisfy the logical mind of the pure thinker; or that the primary accidents in the universe should always remain a mystery, and every man may, by experiments, create laws in nature, although these laws may be contrary to human intelligence. It matters not with me wheter Mr. Silberstein's theory be true or not, but the most important question that would arise in the

mind of the scientist of to-day is this: Should science prove to man that it is not science; or, in other words, should ,,knowledge" cause man to be convinced that he is to remain ignorant?

I desire to make the reader aware of the rhetorical defects of this little book, which is due to the difficulty of translation from the Hebrew, a language with a brief vocabulary, especially in philosophical expressions. This small pamphlet is but a brief extract from the Hebrew work, which comprises fourteen books. It is written in the form of an essay, with the intention of showing the contents of at least a portion of his Hebrew work, and may thus enable him to secure a translation of the other volumes. In my opinion, an important work, such as this, which is the result of years of tedious study and labor upon such an important and wast subject, deserves more than ordinary support. The reader can hardly conceive how brief this extract must necessarily be, and how difficult it was for the author to have the same translated into English. This pamphlet, I trust, will be read carefully, attention being paid to the *thought*, rather than to the *expression* of the thought.

180 Henry Street, New York.

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Preface.

The history of philosophy, like all histories and systems, has had its crazes, changes and vicissitudes. To-day, it is one pet theory or school of thinking, to-morrow its very antithesis, that is in the lead. Inductive and deductive modes of reasoning, transcendentalism and the exact sciences, metaphysics and exclusive mathematics, have all had their rise, decline and fall, to be resurrected again, however, in another generation.

We, of the present day, are just passing through one of these transitory periods in the intellectual history of the human race.

Inductivism, if I may so call it, is all the

craze now, until we make way, sooner perhaps than many dream of, for another hobby.

Look at the manifold intellectual creeds of this century—all one-sidedness, fanaticism, conceit. Consider the creeds of former ages, all vague, indefinite and unreal.

The former as well as the latter, both and all of them are incomplete, unsatisfactory and totally insufficient to the deep, logical and honest thinker.

Most of the laws or axioms in modern natural science, which are almost wholly derived from, or based on inductive results, whilst seemingly true as regards the particular data or phenomena which they seek to establish, when used as a measuring rod in fields outside of their own iron-bound, inflexible and ticy zone, prove very often not only defective, but even false.

What is the reason of all this ?

It is simply because our modes of reasoning, our logic, our ways of research and obser-

vation and all the other means we have so far employed in our efforts to get at philosophical truths, one and all, are too one-sided, too exclusive and too specific to give uniformly harmonious general results. No philosophical system ought to be universally accepted as true, that does not accord equal rights, absolutely and without reserve, *alike* to *deductive* and *inductive* results. Heretofore, in the history of philosophy, such a system is unknown.

In the following pages, which necessarily form but a very *brief extract* of my Hebrew, work, (in five volumes), I have struck out a new, bold and absolutely independent course for myself, wherein I advance an entirely new and original cosmic-theory, using and wielding *inductive* and *deductive* data with like favor, and for which theory I boldly claim a superiority, a harmony and a completeness far surpassing any other accepted creed of the present hour.

How far I have succeeded, whether my theory will go the same way as most philosophical system and theories went—to oblivion, or whether it is destined to mark a new epoch in the realm of thought—*history, and history alone can tell!*

S. J. Silberstein.

THE UNIVERSE

AND ITS EVOLUTION.

CHAPTER I.

The fundamental law in Natural Philosophy is the law of gravitation, discovered by SIR ISAAC NEWTON, about two centuries ago. Many laws in mechanics, physics and astronomy are based upon it. The three laws of Kepler about the motions of the planets in our solar system are supposed to be fully explained by this law; and who would undertake to enumerate the phenomena in nature supposed to prove it! Still I am bold enough to assert, that there never was such a force as the force of attraction; that all the laws deducted from this law of gravitation are utterly without foundation, and that Kepler's laws not only cannot be explained by this supposed law, but that those very laws serve as proof against it.

Kepler found the following three laws governing the motion of planets around the sun:

I. All the planets move in circumferences of ellipses, in one of the foci of which the sun is standing; consequently planets in their motion are sometimes nearer to the sun and sometimes further from it. When they reach the aphelion they are the furthest from the sun, and when at the periphelion they are the nearest to it.

II. All the planets moving in their fixed ellipses around the sun make in equal times equal *areas* of their corresponding ellipse. The earth, for example, completing her ellipse in 365 days (5 hours, 48 minutes, 7.7 seconds), will not make one-quarter of the line of the ellipse in one-quarter of her time, which is 91¼ days, but when nearer to the sun, moves with greater rapidity, and when more remote, to a certain extent, more slowly.

III. The ratio of the (times) squares of the times of two planets equals the ratio of the cubes of their corresponding distances from the sun.

These laws the great mathematician discovered solely by means of mathematical calculation and observation, but he did not give the reason of these laws. When Newton advanced his theory respecting the law of gravitation, Kepler's laws regarding the elliptical motion of the planets were apparently con-

firmed and definitely established. These are Newton's laws of gravitation:

I. All bodies found in the Universe attract one another according to their respective masses, which is produced by the force of gravitation or attraction inherent in matter.

II. This force of attraction diminishes as the square of the distance between the two bodies increases, the distance being measured from the middle of the diameter of the attracting body.

III. Every effect produced by some force in a body will continue forever, unless there be another force to destroy or change the previous effect. This tendency is known in Natural Philosophy under the name of inertia, which property of matter in general is expressed as follows:

All bodies when at rest will always remain so, if there be no other body or force to bring them out of their state of rest; and vice versa, when in motion, they will move eternally with the same force unless acted upon by other forces, to change their force or set them at rest.

IV. Two forces acting under a certain angle on the same body have the resultant force equal to the diagonal of the parallelogram having the same angle of inclination as the working forces, and the sides

proportional to the forces. This is known as the law of the parallelogram of forces.

These fundamental mechanical laws seem to fully explain Kepler's laws. The sun fixed in the focus of the ellipses of all the planets exercises its power of attraction on every one of them, producing a motion in them in a straight line to its centre. Again, the planets having a motion of their own in a different direction, from west to east, as a resultant of these two forces, according to Newton's principle of two side-forces working on one body, move in ellipses.

Thus thought Newton and his followers; but as a matter of fact, Kepler's laws cannot be explained by the law of gravitation. I shall be brief in stating my objections.

We have seen that the planets are in constant motion and that they move in fixed orbits. What is the cause of this motion and wherein lies the propelling force?

There are only two possible causes that would explain it.

I. That motion is inherent in the planets themselves as in all matter, which, as will be shown in the following pages, is actually the case according to my theory.

II. That motion was originally produced and is still being produced by a force outside of the planets; that a body has not a natural motion in it, and when it moves the motion must have been produced and is being produced by a force outside of it. In either case, the motion of the planets as established by Kepler cannot be explained by Newton's principles. Let us first consider the latter supposition, which is more in accord with the views of modern astronomers, viz., that matter is indifferent both to motion and to rest.

The planets then must have received their centrifugal motion from a force outside of themselves, whatever that force might have been. According to Kant and Laplace it was the mechanical force of the sun when in a gaseous state and rotating with great rapidity, projecting from its own substance the planets, one after another into space, where they retained their motion by virtue of inertia. According to others, (the followers of all orthodox and dogmatic religion and philosophical systems), it was some other indefinite, mysterious force, God or His angels, that first started the planets a-rolling, by one powerful impulse, leaving it to inertia to keep up the eternal motion of these celestial bodies in their fixed spheres.

Whichever way it was, whatever the mysterious impulse that first started them, I claim that after thus separating from the sun, they could move in their orbits for a few seconds only, when they would again be irresistibly attracted towards it and finally submerged in its substance and vanish.

It is evident that the resultant force, produced by two side-forces, will remain as such only as long as both forces continue to work; but if one of them ceases, the body being operated upon by one force only, will move in the direction of that force.

The force propelling the planets, according to the second law, worked on them but *once*, at the time they sprung into existence, while the other force, that of attraction, exercised by the sun, is working constantly on them.

The sun renews its force, according to Newton, with every moment and thus with every moment also increases its atraction on the planets.

Therefore in the first moments only, after receiving the impulse, the planets had to move in a direction of the resultant, but after that, as soon as the operating forces were converted into the resultant, the original force, the impulse received by the planets, existed no longer and they had to move towards the sun in a straight line according to the law

of motion produced in a body by one force. From the first moment the planet received its elliptical motion as the direction dictated by the resultants, it is no more operated upon by either of them, only by the resultant (component). The next moment, while the force of attraction is still continuing to exercise its influence, the original power, that imparted its motion to the planet is gone, and the force of attraction has nothing to do with it, but with the resultant force, which now consists of one force constantly increasing, and the other correspondingly decreasing; the resultant, therefore, acting more and more in the direction of the force constantly increasing, which in this case corresponds to the force of attraction. It naturally follows, that the planets ought long ago to have fallen on the sun.

Let us admit that the principle of inertia is true. The constancy of planetary motion is still unexplained, because the principle of inertia teaches only, that a body in motion will continue to move unchanged in its rapidity and direction as long as there is no other body or force in the universe to influence it. If some force brings the body to rest, then the inertia of rest comes into play. Why should the body not retain its original force of motion? The same is applicable to the motion of the planets pro-

duced in them by some known or unknown force. The planets should have moved eternally with the force of the first shock, if there were no attraction towards the sun; but being constantly attracted by the sun, they could not remain in their first motion, be it a thousand times as great as the force of attraction to the sun, for the latter would tend every moment to decrease it, until it necessarily would have brought it to naught. There is only one supposition left, that motion increases by itself, that energy gives birth to new energy in the same body, that a moving body from no other cause but the fact of its being in motion, increases more and more its power of motion, and even it then remains to explain why there should be a preference. for the motion produced by the original propelling force, to the motion produced in the body by the attraction of the sun.

We see this in a body thrown vertically from the earth. Its velocity uniformally diminishes, because of the constant attraction of the earth, which tends with every moment to decrease the motion of the body upwards, and however great the force of throwing is, it must at last be overpowered by the attraction of the earth. In mathematics it is shown that the velocity of an ascending body diminishes at the same

rate as it is decreasing in a descending body. The same is true of a cannon ball, projected with great force out of the mouth of a cannon; it will run a great distance with the original force, but finally will fall on the earth. This case shows plainly the action of the two side-forces, one of which corresponds to the expanded gases in the cannon, the other to the attraction of the earth, forming a straight angle if the mouth of the cannon is horizontal, or any other angle according to the inclination of the cannon to the earth.

Only in the first moment, when the propelling power is great, the ball runs in a straight line, but after that the power of attraction of the earth takes the upper hand and the ball falls to the earth.

A better instance is a boat on a river. The current carries the boat straight along with a certain velocity, when a storm arises and drives it perpendicularly to the first direction with another velocity, the result being, that the boat assumes the direction of the diagonal, depending on the relation of these two contenting forces. As soon as the storm abates, the boat follows the current of the river.

The usual explanation, which makes the resistance of the air or water responsible for it is not sufficient. If the ball of the cannon falls to the earth

on account of the resisting power of the air, and the boat does not retain the position which it acquires during a storm, because of the resistance of the water. The same thing must be true of the ether that permeates the Universe, the existence of which all the phenomena of light seem to prove. Newton himself recognized in the ether the carrier of light. The comet "enca" afforeds another proof of this ether permeating the Universe. It is known that the resistance of the air and water increases with the square of the velocity of the moving body. According to Wega's calculation, the resistence of our atmosphere to a ball moving with a velocity of 6,437 feet a second, equals 16,789 feet; therefore, if the planet Mercury had to move in an atmosphere as ours, the resistance to its motion would be 1,333,100 times greater than that opposing the onward motion of the ball, because Mercury moves with a velocity of 6.7 German miles per second. Again if the ether be even a 1,333,100 times thinner than our atmosphere, the resistance to the motion of the planet Mercury offered by the ether would be as great as the resistance of our atmosphere to the motion of the cannon ball, and Mercury would have fallen on the sun, as the cannon ball falls on the earth. Out of many other objections and inconsistencies pointed out in

my complete work in Hebrew, I shall mention only one more, namely the wonderful adaptability of the motion of the planets to the greater or lesser distance from the sun, in no way explained by the present systems.

Why should Mercury, the nearest planet to the sun, move with so much greater velocity than Neptune, which is the furthest? If we suppose the planets to be projected from the sun, the contrary could be expected. The first offspring of the sun should have a greater rapidity, because the sun then moved with greater energy, shown by the distance it was thrown. This great distance serves again as a factor in diminishing the negative power, that of the attraction to the sun. We should expect, therefore, to find in Neptune the greatest rate of motion, and Mercury, which was thrown from the sun at a later stage, with less force, and, therefore, not so far, and being so much more acted upon by the attraction of the sun, ought to move accordingly more slowly.

We shall consider now ths first supposition, that the planets have their inherent motion as every substance or body existing in the Universe has. This motion of its own will differ according to the respective masses. The greater its mass, the greater will be its motion. The attraction to the sun diminishes

with the square of the increased distance; hence, the inherent motion of the planets will always be greater than the force of attraction exercised by the sun on them. Both forces being constant, it follows that the planets should have moved in hyperbolas, tending with every moment to move further from the centre of the sun, and the longer the course of time, the further they should have been from the sun.

Let us take for example two planets, our earth and Jupiter. The earth weighing 14 quadrillion litres has a force of attraction equal to 15 feet (nearly) a second, the weight of the sun being 355,000 times greater than that of the earth, has a force of attraction $28\frac{1}{4}$ times greater than 15 feet, nearly 420 feet a second, the weight of Jupiter being 1335 times greater than that of the earth, its attraction equals 11 times 15 feet a second. Taking in consideration that the attraction of the sun diminishes with the square of the increasing distance, its attraction exercised on the earth equals only 3 m m. a second, and on Jupiter $\frac{1}{10}$ m m. a second, Hence granting that the earth moves in an ellipses, Jupiter, whose own motion must be 1333 times more than that of the earth—its mass being so many times greater—and whose attraction to the sun being 30 times less, would have gone far away from the sun, where its attraction would no longer reach

it, would have vanished into infinity never to return.

Let us examine more carefully the laws of falling bodies. Here again we find the usual two forces, the force of attraction exercised by the earth and that of inertia. The falling of a body at the velocity of 15 feet a second is not entirely due to the attraction of the earth only, but chiefly to the inertia of the falling body.

I suppose that the explanation given to the fact of bodies, travelling in the first second 15 feet, the next second 45 feet, etc., is so generally known, that there is no need to dwell on it longer.

These laws fully established as they are by experiment and calculation will not stand the test of pure reason.

With all their careful calculation, the mathematicians can give no exact measure of the attraction of the earth, apart from the inertia of the moving body. The power of attraction exercised by the earth according to their own doctrine lies in and is proportional to its mass. Why then should they not tell us how great is this power of attraction of our earth itself, putting aside the inertia of the moving body, which is nothing else but a property to retain the successive impulses of the attracting earth.

Why should we not know the exact measure of this power of our earth as well as we know that of man, horse, engine, etc.?

Had it been said that the power of attraction of the earth *alone* is equal to 15 feet a second, we should have known *this* power; then even if we divided the second into millions and millions of parts we could tell the distance the power of attraction moves the body in each of these smallest parts of time. But as the velocity at the rate of 15 feet per second is more due to the inertia of the moving body, because the power of attraction alone works only the first moment, and from the second moment till the last of the millions of parts, the inertia comes into play, which by retaining the effect of each moment and thus increasing the velocity of the motion as the square of time makes the body move in all 15 feet a second, the power of attraction alone is amounts to naught.

Assuming again that we could take away the inertia and with it the power of accumulating the attraction of the earth, then the body, left to the attraction of the earth alone, would have travelled the 15 feet perhaps in several days if not years. Now if the earth, whose weight amounts to nearly 14 quadrillion lbs., exercises such an attractive

power, what will be the attraction of one of the atoms constituting the earth amount to? Less than o. I should like to hear from the scientist how great is the attraction of a body weighing a pound.

CHAPTER II.

Now before coming to my theory of the origin of motion of the celestial bodies, not excluding our own planatory system, I desire to show its connection with what I may be permitted to consider a deeper and more philosophical view of the the Universe and its working. Therefore, in the following pages the reader will find a brief examination of Spinoza's pantheistic Philosophy, consciously or unconsciously shared by the greater part of the modern thinkers and scientists.

Even the followers of this materialistic age, who, as a rule, are loath to deal in abstrusive philosophical and metaphysical systems, might also read the following pages with interest.

The doctrine of evolution or transformation as advocated by Lamark, Darvin, Lyell and Haeckel, is widely accepted by naturalists. This doctrine involves, generally speaking, the idea of slow perfection of the Universe: the process of development

from mineral life to vegetable, from vegetable to animal, and from the latter to man.

Let me apply to the consideration of these views both methods, the inductive and deductive, the former preferred by the naturalists of to-day, and the latter ardently adhered to by the transcendentalists. Man could not have existed before the animal; animals were preceded in the process of evolution by plants, and these by animals. Solid bodies did not appear before there existed for some period of time fluids, the fluids were preceded by gases, the latter by the molecules, *which are the real, separate, and different elements*, the molecules by atoms.

The atoms being separate bodies limited in space and time, and constantly changing in their manifold combination in forming the various complex bodies in the Universe, can not be eternal particles, but must have also been created.

Eternal substance is unchangeable and infinite.

Again, the atoms could not have been created out of void, since from nothingness, nothing can be produced. On the other hand, they could not have been formed out of matter, as there is no free plastic matter in the Universe outside of the atoms themselves, and all bodies appearing to us as matter are but aggregations of atoms in various forms. It

consequently follows that the atoms were formed out of an essence that is neither matter nor void but from what I call *absolute essence* or the absolute essentia pre-existans.

This very essence was first transformed into atoms, atoms into molecules, these into gases, then fluids, then solids, plants, animals, and finally into man. Each particular being in actu is therefore an individualized modification of the more general essence preceding it, according to the process of evolution. Man in his individualized existence is a particular being of the more general existence of animal life, including both, animal and man. The atoms combined to constitute the body of man, could not make up his body unless they were before that parts of the animal body in process of evolution. The same holds good if we descend in the scale of creation to more and more general and abstract forms, including more classes of things and beings down to the molecules, atoms and the absolute essence; all that exists in nature and which was pre-existing to all, nearly the same as that which Leibnitz meant by his "Predestined Harmony," only I emphasize more the chain of evolution this pre-exisiting essence was destined to undergo. Not that the essence was preceding in time the creation of atoms, as there was no time

when the abstract essence existed without being particularized, since the essence is constantly being particularized into individual things or beings, but it was previous in existence so far as all the particular forms and properties of matter pre-existed in potentia in it. Man as we see him now in actu was first in potentia in the animal life, the preceding animal life in actu contained a latent force to be transformed into man after a certain period; and so on to the absolute essence, which includes in potentia all the modes of existence. The whole Universe is thus one absolute essence, containing within itself all the compound bodies of the world potentially; the separate, individual things and beings are only different in actu; as different, acting and real manifestations of the absolute essence they all converge into its absolute Unity and are therefore connected by this strong inner tie forever. This Essence is somewhat akin to Spinoza's God as well as that of the modern philosophers and Kabbalists. But Spinoza considers the *extended* being and the *thinking* being as one and the same, which idea I do not share.

Spinoza says:

1. "Cogitatio attributum Dei est, sive Deus est res cogitans."

2. "Extensio attributum Dei est, sive Deus est res extensa."

According to Spinoza's view there is only one essence, conceived by us in two attributes, through the attributes of Extension and of Thought, and these two conceptions are of the same one perfect being. All the different bodies in time and space, being limited, are but modes of Extension. The conception of the attribute of Extension as it appears to us when the body changes its position and time, being operated upon or moved by another finite cause. The God of Extension of Spinoza is nothing else but the universal matter encompassing all the separate material things of the Universe, which being individualties limited by time and space, following one another in the process of creation, are conceived by us only through changes of shape and space going on in them, owing to the constant motion of matter acting or being acted upon. The Universal matter may be compared to the ocean, and the different bodies to its waves, which driven by a storm might at times seem independent of the ocean, but in another moment the high wave fall back into the ocean to be followed by other waves, still of the same source.

The God of Thought according to Spinoza, is the Spiritual part of the universal matter.

Intelligence as well as all the different conceptions, ideas and passions of man, like: will, love, hatred, etc., are bat modi of the Thinking being. All the separate ideas limited in time, are revealed to us through the same constant change of impressions and images in our mind, tied with the chain of causation belonging to the attribute Thought, which is the Spiritual part in matter, acting or being acted upon. Both these attributes of Extension and Thought, are one in God absolutely.

Such is Spinoza's doctrine, but it is not true.

1. The extended Being or its synonym matter, is really one in all the compound bodies of the world. All the numerous bodies of the Universe, however different in their respective qualities and quantities, in whatever way they may be conceived by us, whatever changes they may undergo in time and space, are *one* as regards matter. The universal matter by its inherent forces and increasing motion is constantly particularizing itself into separate bodies, and consequently these bodies are only shapes, parts and manifestations of the ocean of the universal matter. The same matter is in man, as it is in animals, plants and minerals. The atoms in the brain of man

are the same as those we find in his leg; the same atoms are in all we see, feel and conceive. The atoms constituting a certain plant are converted into those of an animal; the atoms of man will, after a certain period become atoms of minerals, plants, animals or men, and they will always belong to the universal matter, which, through its own forces acting on it, makes the atoms continue in different aggregations and ways.

But not so with pure absolute reason; it cannot be converted into one or another conception, into this or that passion. Our ideas change, our desires, passions, affections, feelings and images are changeable within time and space, differ with different individuals; but the pure intellect is never changeable, neither in time nor space, it is never different in different persons. The truth that the sum of the angles in a triangle equals two right angles is not changeable, it is eternal in all times, places and with all men.

The intellect is never changing, and is never particularizing itself in different forms nor shapes, and we cannot conceive of it as changing.

II. The extended Being of Spinoza or the unlimited absolute matter, while it is revealing itself to us with its actions in different material, limited bodies, gives rise to actually different substances.

The quantity and quality of one compound body is necessarily different from that of other bodies. I say necessarily, because every new compound body could not come into existence before the body preceding it was changed. All new bodies come from some other bodies changed in their qualities and quantities so as to make a new one. Therefore all existing creatures and beings come one from the other, and are all tied with the chain of causation working on the absolute matter. This, however, is the case only with material bodies, but not with the intellect and its individual expression. Intellectual conclusions or rather truths do not spring from another, one is not the cause of the other; one form of truth cannot be converted into another form of truth. If we draw inferences from previous truths, and base our conclusions thereon as we generally do in Geometry and Mathematics, the previous truths remain as such unchanged; they were not converted into new truths. All that is true is true *absolutely*, and remains so forever.

Any truth in the Universe is not different from that of another, since truths have no distinctive individualizing features or qualities. What is true is true and holds good of all truths.

III. The extended Being or the absolute matter, has always in itself some acting forces. The matter, therefore, being constantly worked upon is necessarily constantly changing in time and space. But the thinking Being or the absolute intellect is not an acting force, neither it is acted upon by other forces, and it does not reveal itself to us in different forms or manifestations. An action may be voluntary or involuntary, but neither one nor the other can be said of the intellect. When a man thinks of the properties of the angles of a triangle being equal to two right angles, the action of thinking is going on only in the material part of man, the body being a mode of matter. The action consists in preventing other thoughts or images from entering the brain, so it can concentrate its force entirely on the knowledge of the essence of triangles.

In our material part only lies the free will or the necessity of thinking of the triangle. The same is true of the triangle itself. The physical triangle, being an area limited by three sides, has the necessary result of the sum of its angles being equal to two right angles; but the mathematical triangle, or rather the intellectual conception of the essence of a triangle, has nothing to do with free will nor with necessity. The absolute intellectual knowledge of the

essence of the triangle contains all the properties and laws of the latter, not from *free* will, neither from *necessity* of the intellect, but because the essence of the triangle is such and not otherwise.

Suppose we take another proposition about the same triangle, such as that the sum of its two sides is always greater than the third side; or take quite another proposition about another figure, for example the proposition that all straight lines drawn from the centre of a complete circle to its circumference are equal. All these propositions, two of which concern the same body and one another body, are not particularized propositions of the absolute intellect itself; they did not follow one another in creation, they are not offsprings of one another, they are not bound by the chain of causation with the thinking Being, but all are one in the absolute intellect, which is the pure knowledge of the essence of things and beings. Therefore, we are modes of the extended Being only, in so far as we are matter, which came into existence as the last in the long chain of the evolution of matter, bound through this very chain to the absolute matter; but we are not modes of the thinking Being. Truths found out by our mind, so far as they are truths, are the truths of the thinking being or the absolute intellect itself; the difference between

the reasoning man and the absolute intellect lies only in the material body of the former, which being a mode of the extended Being, a certain changed state of matter limited by time and place, can not contain nor comprehend all the truth of the absolute intellect; but all the real verities that it does contain are nothing else but the intellect itself. The reasoning power of man, has not its cause, as Spinoza says it has, in the thinking Being, neither is it worked upon by another individual mode in actu, but is the thinking being itself. As for the imagination of man, his desires, passions, etc., they are not modes of the absolute intellect, but of the extended Being. Let me put it in clearer words. The imagination, the desire, etc., in man as well as in animals, are but forces acting in matter; and being such they change, differ and grow out of one another.

The same forces that work in man work in animals, differing with the construction of their material bodies, but the intellect in man, which judges the sensations and conceptions of all that surrounds him, of the essence of his own nature, as well as the essence of nature outside of him, is the thinking Being itself. This intellect is not *in* man, it is not a force working in the matter composing man; but man with his brain as with a well-constructed machine or a sort of telescope or microscope, com-

prehends the absolute essence of the created things, which is identical with the absolute intellect, with the knowledge of ideas, which is not acting and not being acted upon. His intellect is not the particularized or revealed of the absolute essence, which is manifesting itself in this way, nor is it an evolution of something inherent in the material part of his brain, but is identical with the absolute intellect, which is outside and independent of him. Man simply conceives it objectively.

Let me continue the inductive method, or the method a posteriori, which I shall follow exclusively throughout this chapter.

Every individual being or thing is a particularized case of a more general preceding being or thing. All the different existing bodies in the world, which grew out from one another in the process of evolution, are different only in so far as they are removed from the absolute essence; each particular form of existence is some new change from a previous and more general form of existence, and so on, till we reach the first form, which I have termed the absolute essence.

Now we also know that there is never to be found a stock of raw material out of which Nature creates the visible and invisible world. The universal matter is not eternal per se, as the matter

through which all the composite bodies manifest themselves to us, is nothing else but the different combination of atoms, which can only be conceived by the pure intellect not through the senses. In a drop of water the microscope reveals to us thousands upon thousands of microbes. The microbes are living beings, having different organs of digestion, reproduction, motion, etc.; the organs consist of molecules and these of atoms.

The size of an atom itself is even beyond the power of imagination. These atoms always remain separated in all their different associations and congregations. Even in the heaviest of metals like gold and platinum, the atoms do not come so close together as not to be divided by pores, however small, and all the different forces in matter, all the different qualities we come across in different bodies are but the result of the different ways the atoms came together to form a molecule, and the different forms of association of the molecules to form bodies. Hence in the atoms themselves there would not be different forces, because the various forces in nature are nothing else but the result of the different combinations of atoms, and if you consider them as the prima materia, eternal per se, having the cause of their existence in themselves, they could never be

combined to make up molecules and then bodies. How could the force that caused them to exist in this attennated and separated state be converted into another quite opposite force, which causes their congregation into molecules and bodies.

It is unreasonable, therefore, to admit the existence of an eternal matter preceding the acting or existing individualities of the Universe. But we know that the laws of nature are laws of the intellect, that there is no action or phenomenon in nature, but occuring in obedience to the laws of the intellect, that the idea of an existing thing precedes the being of it, that knowing the causes we can safely foretell the coming actions, we must infer that the *idea* of all we see and find in the Universe preceded the existence in actu.

Therefore I conclusively say: All that exists in factu and in actu in the Universe, has been before in the idealistic state; that the existence of the Intellect includes in its absolute identity all that was, is and will be in actu; the Thinking Being includes also the extended being; the universal matter is but an offspring or rather an emanatio of the Thinking Being. The extended being is to the Thinkiug Being as a ray of light to the sun, or better still, it is an act of thought of the Thinking Being; a reflection of it.

CHAPTER III.

Now as to the deductive or the method *a priori.*

All existence and being in the Universe in general are *one* and absolute.

Since things in the universal existence can neither be evolved from nor converted into naught, but must spring one from the other, one after another in the gradual, harmonious and eternal scale of creation, according to fixed, immutable and unvarying laws, it follows that these laws that remain unchanged through all these endless changes, that nital or innermost force, or principle which holds and corelates the universe together, must be absolute, unlimited in space, time or attribute, without beginning or end, the same now and forever, in all its manifold manifestations in matter, always consistent in itself. And again, since this absolute force or principle always acts according to laws of pure reason or intellect, it must be identical with the intellect itself, which, like the thread through a row of pearls, runs evenly, continuously and consistently throughout the Universe.

This Absolute Intellect, or pure reason, cannot change, particularize or manifest itself in other than it is, since in so doing, it would produce a corresponding change in the harmony and relation of the Uni-

verse and thus change and disturb the laws of nature. Pure reason or the Absolute Intellect, the vital principle that unites, holds and governs all things in the universal existence, contains in its state all possible, conceivable forms, and combinations of forms and of shapes in the Universe.

In this state these forms are eternal, blend and flow into one indistinguishable *whole*. It is only when the Absolute Intellect is *reflected* that they assume individual, separate existence.

Creation is simply a reflection, so to say, of the Absolute Intellect,—its act of thought.

The visible world has a double existence: one eternal in the bosom, so to speak, of the Absolute Intellect before it manifests itself, and the other after it is reflected, or particularized. It is only created in so far as it is secondary to thought and a reflex of the same. In its abstract state it is eternal.

The Absolute Intellect containing in idealistic state the absolute essence with all its particularized forms, has no attributes whatever, no preceding cause—as it is not an acting force—it is not acted upon by other forces, and is not transformed into different bodies limited by form and quality.

This Absolute Intellect was conceived by the author of Brahmaism and Budaism long before Moses.

By the name Brahma (nature), they expressed the idea of the Being who is the source of the All.

But the truths taught by the early teachers of Brahmaism were misunderstood by the people of that time, and by their spiritual teachers, the latter having introduced false interpretations, from which sprung the different ideas of mythology, heathenism and Cabala.

Moses and the prophets, especially Jeremiah, had a more thorough conception about this Absolute Intellect, whom they designated by the name Jehovah. But even Moses, having found the people of Israel not ready to conceive his ideas, was compelled to bring in mythology into his teachings, which remained with the Jews and became strongly interwoven with his cardinal principles.

The prophets, during the existence of the first temple, and hereafter the talmudists until the time of Hillel the Old made no efforts to isolate the pure doctrine of Jehovah from the mythology.

About 50 years B. C. there rose an immature and undergraduate class of pupils from the schools of Shammai and Hillel, who brought in so many different mythologies in the talmud, that the pure doctrine of Moses and prophets became almost entirely overshadowed by the teaching of a personal God with

human attributes, and added to this the teachings of Zoraostor hence the source of the three great religions: Judaism, Christianity and Mohamedism.

(About these religions I shall soon issue a brief abstract from my work Religion and Law.)

This Absolute Intellect is about the same as the Mind (*νους*) of the Greeks, from Thales to Anaxagoras and Plato, to the modern thinkers, as Bruno, Leibnitz, Wolf till Schaupenhauer. Some of these thinkers saw it clearly in their minds, some not so clearly; some had the courage to proclaim this idea, some were afraid of the ignorant masses. Others again substituted false and superstitious doctrines, in order to keep the masses in the dark and, thus, deprive them of the true light, but none could explain with it all the forces that work in nature, and the result is that this pure and exacted knowledge became neglected and derided. I will now prove to show that all natural laws and universal forces not only do not contradict but are actually based on this view.

The whole Universe, or that which I term the absolute essence, being an emanation of the Absolute Intellect, an act of its thought, is eternal in so far as it is an outcome of the eternal, *Absolute Intellect, but not per se.* The essence is neither matter,

nor force, it is unlimited by time and space; in short, it is eternal as regards its latent power, its potential forces, owing to, which we say, that it contains all that exists in reality; but being an offspring of the Absolute Intellect, a separation or emanation of the latter, having developed into different beings teeming with acting living forces, as such as the world in actu, it cannot necessarily be eternal.

May be that the "Entelechie," which Aristoteles inherited from his teacher Plato, was meant to express the same idea of the first transformation of the Universe in potentia into the acting and individualizing one, but as it was not clearly expressed, it was lost to his commentators.

Thus, the world in abstract is the first transformation from the absolute to the particular, out of which come all the different bodies, one from another, one after another, from more general existences to more individualized.

These individual forms of matter and force are not absolute in themselves, as they are constantly changing their aspects both qualitatively and quantitatively, according to certain laws and causes. But these causes are one in all in the absolute essence; all the forms, shapes and modes of matter are bound by the same chain to the absolute essence, which, being it-

self an abstract creation of the Absolute Intellect, includes in potentia all the forms, shapes, forces and causes that exist and work in the world at large. The Absolute Intellect is the only cause and the only force in the absolute essence. Strictly speaking, the Absolute Intellect cannot be the cause or force of anything, as it is not acting, neither is it acted upon by other causes or forces; it is not particularizing itself and is not revealing itself in different states and forms, but I choose to call it *the source of All*, as it contains in an idealistic state all the shapes, compositions, qualities and quantities, peculiarities and forces of all that exists and will exist, out of which the Universe in general is an offspring in its latent state; so that the changes constantly going on in shapes, qualities and properties of bodies are only changes in their active state, but not in their idealistic state as once framed in the Absolute Intellect; neither are there changes going on in the latent state of the Universe in general, where nothing perishes and nothing is changed from eternity to eternity. In this sense only do I term the Absolute Intellect the cause of the absolute essence.

The only force that works in the absolute essence, which is an offspring of the Absolute Intellect, evolved, as it is, from the idealistic state into latent state,

is that which operates to transform potential tendencies into active realities.

This force brought first the atoms into existence, made the absolute essence transform itself from its potential state into an active state, as revealed in the form of individual atoms.

Atoms—the beginning of matter are to be regarded not as thinking beings as Leibnitz thought, but as the smallest part of matter conceived only by our intellect, but not through the instrumentility of our senses.

These atoms being the first transformation from the absolute potential essence to active individual forms, are operated by the general universal force—the force that keeps all individualites as such.

This force I call *centrality*, for the reason of its being located in the centre of every individual body whatever its shape may be, keeping the body in its peculiar state, its peculiar form, in its quantity and in its individnal properties.

The cause of this force of *centrality* is evident, it being the same cause that brought about the individualization of the absolute essence, and is the same cause which is working in the created individual atoms themselves to keep up their peculiar functions as such. The atoms that are the first material indivi-

duals, from the aggregation and combination of which all the visible and invisible bodies have sprung, have at first no other force inherent in them but this—the force of centrality.

The force of realization or individualization of the absolute essence becomes the force of centrality of the atoms; the same farce which brought about their existence, is the same which holds their peculiar existence firmly fixed.

The reason why this force is located in the centre is as follows: The atoms, though physically indivisible and perceivable only by our intellect, are distinct individuals, each separately occupying some space, and are, therefore, capable of being intellectually conceived as consisting of a certain number of constituents—of parts that go to make up this individual body—the atom, since the space bounded by the atom can be conceived to be infinitely divisible.

Consequently the force of centrality must be located in the centre, whence it exercises its binding influence on all parts equally, and we therefore must conceive that the atoms in the first moment of their creation were regular spheres, whose radii were equal.

The atoms as regard their quantity and quality as well as the distance from one another in space

must be equal, because the force or cause, which brought them into their individualized existence, is absolutely *one* in the absolute essence.

(In my book in Hebrew I repudiate at length the doctrines of the physicists of the present day who consider the atoms as elements possessing different qualities and quantities.)

Here, however, I can scarcely do more then make this general remark. Every change in a body must be due to some cause, either existing in it, or outside of it. The atoms could have no intrinsic or extrinsic causes to make them different from one another.

They are simple, elementary, non compounded bodies, and therefore they cannot have different inner forces to produce in them different qualities; neither can we have any outside forces to influence a variation in them, because if we would have any causes outside of the atoms to make them differ one from another, we must expect to find 66 or 70 special forces in 66 or 70 different bodies working separately on its species of them, but as in reality we have no other matter but the atoms, it follows that the quality and quantity of the atoms, as well as the distance from one another must be equal.

CHAPTER IV.

Now as to the evolution of forces.

The force of *centrality* in the atoms bringhts about a change in their shapes and thereby caused them to attain a two-fold motion: the atoms assume an *oval* form and start their motion around their axis and in the circumference of an ellipses.

The explanation of it is as follows:

The force of centrality, located in the centre of the spherical atom yields and imparts itself to all the parts of the atom, thereby granting these parts the tendency to keep all its intellectual parts together, and in this way the centrality exerting its influence on each and every point of the body of the atom produces a vibration of all its parts.

Let us draw imaginary circles around the centre of the atom in its body till its circumference, the sphere nearest to its centre will be the smallest and the sphere bounded by its circumference the greatest. Now the force of centrality is the strongest in the centre of the atom, weaker in the points of the first imaginary sphere, still weaker in the points or parts in following spheres, and the weakest at the circumference, because the centrality divided itself in as ever so many parts.

The vibration of the points of the spheres is quite the reverse, it is the greatest at the circumference and naught in the centrum, because it is evident that the points of the second imaginary sphere contains a double motion, namely, from the influence of the force of centrality and from the vibratory force of the parts of the first sphere. This holds true with parts of the third sphere and so on until the last sphere, which is the circumference, where the greatest force of motion lies.

Now there is a struggle between the force of centrality tending to keep the atom in its peculiar shape and place and the force of motion tending with the greatest force in the circumference, to move the atom from its place and the result of this struggle is the motion of the atom around its axis, thus having no motion where the strongest force of centrality lies, and the greatest motion in the circumference. This very result of these two forces, *centrality* and *motion* is the foundation of the universal law of "Parallelogram of forces," that all other forces in nature are but the resultant of these two forces of centrality and motion. (This will be more explained in the further pages.)

If in each point of the atom both forces were equal and opposite, there would be a destruction of

both forces, but as this is not the case, a resultant force combining and satisfying, so to say both contending forces is originating.

Each and every part of the circumference of the atom having the tendency, as shown, to vibrate in its space must have a tendency to move directly in a straight line from the centre of the atom, it follows that every point works itself outwards in a different direction from the other point. All the parts looking to east move in a straight line eastwards, the other parts looking west do the same in an opposite direction, and so is the case with each side, the force of centrality constantly working and creating motion, which must always be in actu, the result is, the centre changed its position and that the atom assumes an ovoid shape, longer in one direction and shorter in the other; more massive on one end of the long diameter and thinner at the other, and in this form the motion *must* be in the direction of the more massive end of the long diameter, so that all the opposing forces are made *one* and *satisfied.*

Thus the force of centrality with the motion as the resultant of their work wer not destroyed but alloyed and combined to produce the change in the shape of the atoms and to cause their motion around their short axis.

The motion produced by the force of centrality becomes a greater opponent to the centrality with the increase of the distance of the parts from the center, hence two universal laws in Mechanics:

1st. Motion produces motion, or in other words: the velocity of a moving body increases *itself* with every moment of *its* motion.

The following is an explanation of this law. The force of centrality in the center of an atom, tending to keep the atom in its individual state and its peculiar position, by dividing its influence on the *intellectual* particles of the atom, causes a vibration, or so to speak, a motion of each of the particles. The peculiarity of the motion is to antagonize the power of centrality, each particle having the tendency to move away from the center. But since the force of centrality is the *primative* force in nature, the *source* of all forces, the cause of which lies in the absolute essence in its *eternal* realization and individuallization, cannot be destroyed by the power of motion, which is nothing else but the *outgoing* of centrality, but *must* exercise its power by distributing its influence over all the particles of the atoms, in every conceivable fraction of time, to keep the atom with each conceivable particle in their place and position, and thus continually giving rise to new vibrations in the already vibratory particles, the result is that *motion produces motion.*

Remark: According to my theory, using the deductive method, the principal and foremost law in the universe is that motion produces motion, and that motion increases of itself in a moving body with the rate of its velocity. The evolution of the universe is based upon this theory. But the physicists, who base their results on experiments through the inductive method alone, this theory cannot hold good at the first sight. According to them a moving body cannot increase its velocity as long as there is no outside force to renew its motion. Naturally in such a narrow space as is alloted to me in this brief extract of my work, I cannot go into an elaborate and minute repudiation of their theories. Yet I shall say this much, that, taking for grant their theories, there could not be any progress in the universe, nor any developments in nature.

Take the earth for example. If the motion of its parts had not increased by itself, it must necessarily have remained in its mineral state, without an atmosphere to envelope her, without plants, animals and men. All things that we see upon the earth were developed by increased motion inherent in it according to this law, that motion produces motion. The increased velocity of the compound particles of the earth produced the atmosphere around it, which is nothing else but particles seperated from it. The continual

increase of motion tended the seperation of different elements of the earth, which together with the already seperate atmosphere have combined chemically and mechanically to develope plants, the latter again through the same increase of the motion developed animals and men. All modern experiments which are supposed to oppose this theory of the genesis of the atmosphere serve, according to my theory, to prove the affirmative.

I, therefore, claim that the first and principal law in the universal development is that *motion produces motion.* But the theory of scientists, which is based upon mathematical experiments, holds true since the experiments are made upon bodies already developed. Bodies in their development aquired different qualities and quantities and different velocities, and acting one upon the other in the universal space, the velocity of a larger body makes a change upon the surrounding ones, thereby alter the motion of them, which, otherwise necessarily increase as I have already proved before.

The second law is that all bodies that move in a circumference of a circle, have the tendency with the increase of their motion to remote from the center. This is called the ,,Centrifugal force of bodies". The explanation of this second law is the same as that of the first law.

The force of centrality, as shown before, is inherent in all bodies, as well as in the atoms tending to keep the body in its individual state and peculiarities, by dividing itself with its influence all parts of the body thus creating a motion in the body. The peculiarity of the motion is to autagonize the power of centrality. The centrality must, therefore, renew its influence and *produce* new motion. The motion has its greatest power, as I have said, in the circumference of the body and naught in the center; therefore, all the particles in the circumference of a compound body, or a body moving around another body, have the power to overtake the force of centrality and to remove from the center through the increased motion.

The same is the case with the atoms. The motion of the atom in its first state which brought about the revolving of the atom around its axis as a result of the different directions of the motion, caused an increase in the centrality to divide its influence on all the particles of the atom, and as a consequence, an increase in the rate of motion, and a strong tendency in the particles of the circumference to remove from the center with a power of centrifugal force in its second state, and since the particles cannot be separated from one another there must be a tendency of the whole

atom, together with its intellectual parts; to move from their occupied position in a straight line forwards.

In this way a new struggle of forces and direction ensued: the particles of the atom of one end tend to move it in a straight line in one direction, the particles of the other end in another, the result is that the whole atom starts to move in a circumference of an ellipse, with the thickest end beyoud its area, when all the struggling forces came to this resultant.

The atom could not move in a straight line in the direction of one of its ends, because it was prevented from doing so by the other end, neither could it swing to and fro in the swinging area of a pendulum, because it was prevented from it by the motion of the upper and lower parts of the atom. And again, if the atom had the same equal motion in all its parts, it would have moved in a circumference of a complete circle; but as the thickest end of its longer diameter had a greater motion than the thinner, and both of these ends a greater motion than the short diameter, it started to move in an ellipse with its thickest end always out of the area of this ellipse and always beyoud it, as in such a way all the different rates of motion are at an equilibrium with the force of centrality, and that is the way the double movement of each oval atom—around its axis and in an ellipse, with which

the long diameter of the atom makes a certain angle, has oroginated.

The atoms through their eliptical motion must meet one another, and, coming in contact, form one common center. The mechanism of this phenomenon is as follows;

The meeting of two atoms traveling from different directions cause a cessation of motion at their points of contact, and at the same moment both centers of the atoms give way to the point of contact which is at rest, and thus, the force of centrality of both atoms is now located at this point. In this way two or more atoms become one body with as many times greater force of centrality as there had been atoms to combine. These bodies I call molecules. Each molecule has its center, wherefrom the force of centrality divides itself equally to all its component parts. In this way the world of atoms developes itself into a world of molecules.

The atoms in their motion forming an inclined angle of their axis to their ellipses and moving with the thickets end beyond the area of their ellipses, touch one another in their *union* by a very small portion of their bodies only, thus causing in the first molecules a greater porosity. These molecules are, therefore, the lightest,—and as hydrogen is the lightest of

all the chemical elements, *at the present time*, I may have the right to conclude, that the world of atoms was first converted into molecules of hydrogen, possessing the same law of double motion.

(NOTE: When I say that the world of atoms was converted into a world of molecules, I do not mean by it that the world was created a new. The universe, or as I called it in my philosophical system the *absolute essence*, the offspring of the Absolute Intellect, is unlimited by time and place, has no beginning, no end, in so far as it contains potentially all the compound bodies; but when it realizes itself it creates bodies limited by time and place. Each created thing exists only at a certain time and occupies a certain place: it must have been a time when this created body did not exist, and there will be a time when this thing will disappear. The same change applies to our solar system as well: there was a time whem the sun with its planets did not exist as such, and there will come a time when the whole solar system will disappear and be converted into something else. The same is true with all the innumerable bodies that fill the universe! Each moment some new worlds come into existence and others vanish, change into other beings and worlds!)

The molecules of hydrogen moved with a rate of increased motion as many times as there had been atoms to make up one molecule. But when the first atoms were converted into the said molecules, there were produced empty spaces between them in the universe or, as I called it, in the absolute essence, which gave birth again to atoms equally distanced from one another; these atoms moved with greater rapidity than the first atoms, because the absolute essence was, figuratively speaking, influenced by the surrounding rapid molecules to give rize to the new atoms a greater quantity of motion. It follows, that, these new atoms, being greatly influenced by the surrounding molecules which are already in great motion, aside from their own motion produced by the centrality, have aquired a still more rapid velocity from these moving molecules,

This leads us to a fundamental law in Nature: Every massive body in rapid motion causes all the smaller bodies, moving near it with a slow velocity, to increase their motion, according to the quantity, direction and distance of the moving massive body. (This law is fully explained in my work in Hebrew). That gives us quite a new idea about the motion of the planets around the sun. All bodies have the force of centrality, which gives rise to motion; it is

evident from previous explanations that the greater the mass of matter in the body the greater will be its motion. The sun being greater than all its planets taken together, has the greatest force of motion; Jupiter, the greatest of the planets has the greatest force of motion in comparison with the other planets; Mercury, the smallest of the planets, must have the least force of motion. But Mercury being the nearest to the sun, the influence of the latter moving from west to east is so great upon its surrounding area that it causes the planet to move with the quickest speed, namely; 6,9 German miles a second, the next planet Venus, being less influenced by the sun, moves only with the speed 4,9 miles; the earth that is still further from the sun moves only 4,7 miles, and Jupiter, the more furthest planet from the sun, only with 1,7 miles a second, and so is the case with all the planets; thus the work of the planetary system is not due to the ,,gravitation", but to the force of *motion.* Without the sun, however, the planets would move slower, and according to their respective masses.

Now, the new atoms formed between the first molecules attain a greater motion from the latter, according to their rate, direction and distance from them. The new atoms could not move long before they came to strike one another to form new mole-

cules. The new atoms having a greater motion cannot move with the thickest end beyond their area as the first atoms, wherefore coming in contact with one another must meet by a greater area of their respective bodies; consequently, the atoms having combined themselves in this way, created new molecules, having smaller pores between their component atoms, hence the creation of the more compact molecules of nitrogen. When the universe was filled with molecules of hydrogen and nitrogen, empty spaces (or the absolute essence) gave rise again to new atoms with still greater motion than the previous ones; the rapid motion caused them to come together still closer and formed molecules with a still thinner porosity, which could be nothing else but the molecules of oxygen.

The other elements came into existence one after another in the same way, according to the different modes of combination of the atoms, which were continually formed and continually acquiring more and more velocity from the already created molecules and bodies.

The quality of an element or a body is due to the same cause that effected them to be different in quantity.

The explanations of this is as follows: The qualities of a body are its physical properties, which is

nothing else but a modification of certain forces peculiar to the bodies proceeding it in the process of evolution. All existing forces in the universe are but modifications of the primitive force of centrality. The different molecules came into existence through the different combinations of atoms; these molecules, consequently, possess different porosities, the bodies, again being composed of different molecules must differ from one another in their porosity. The centrality dividing itself to the parts of the body to keep it in its peculiar state and thereby causing the motion, has its influence upon the *matter* of the body *only*, but not upon the spaces between the atoms or molecules. The empty spaces serve as an impediment to the action of centrality, thereby causing a hinderance of the motion. This restraint upon the centrality is different according to the extent of the spaces, which is nothing else than the porosity of the body. Therefore, the centrality working in a body of a certain porosity effects a certain motion or a certain quality, while working in a body having a different porosity causes a different kind of motion, and, consequently, a different quality. I therefore, conclude that the qualities and quantities of all bodies in the universe are due to the same one cause — of centrality and motion.

The *heat* in a body is but the force of motion overpowering the force of centrality; its manifestation consist in seperating the parts of the compound body. These seperated parts moving with the *greatest velocity* causes an undulatory motion of the primative atoms, which fill the universe, hence the sensation of *light.*

The centrality and motion working differently in the different parts of a body produces a resultant force which we call *electricity.* This differentiation of the work of the primitive two forces is due to the different state of porosity of the body, e. g.: if we warm one portion of a body we cause a dilation of the pores at this portion, thereby hindering the influence of the force of centrality and, consequently, increasing the motion. In the non—heated portion the centrality works therefore different than in the heated portion, and thus we produce two kinds of motion of the atoms in the same body, and the overpowering of one kind of motion over the other in the same body we perceive by our senses as electricity; and as the electricity is the excitation of the motion it must necessarily lodge at the circumference of the electrified body, where as I have shown, the greatest power of motion must be.

The reason why electrified bodies lose their electricity by coming in contact which another body or

when the positive and negative electricities by coming together are converted into naught, is nothing else but that the centrality and motion in the body came to their previous regular state.

Magnetism is a motion produced in a compound body possessing thin and parallel elongated pores. The centrality in such a body works without any obstacle, thus producing a motion in the molecules of a great velocity to both ends, of this peculiar body, and parallel with the pores. Scientific experiments have shown that a piece of iron brought into a state of magnetism by electrifying it, becomes a little elongated, so that this force can only be excited in bodies possessing this peculiar quality, namly, the elongation of the pores in one direction.

The cause of adherence of small particles to a magnet, as well as the cause of *falling bodies* is not due to the *hypothetical* gravitation but to the same two forces of centrality and motion, as it is explained by the following:

A large body moving with a great velocity and having its greater motion at the circumference, causes all the surrounding atoms, molecules and small bodies. which are at a *certain distance*, to move with such a great rapidity, that the motion of each of these bo-

dies overpowers its centrality; consequently the smaller bodies, having a centrality, which is no longer able to keep them in their peculiar state and position in the universal space, must become parts of the larger body, to move together.

This is, according to my theory, the fundamental law in Natural Philosophy, by which all forces and phenomena in nature are fully explained.

When the universe was full of the different molecules or elements, (as the chemists called them), having the double motion, met one another and combined to make up a massive body of a loose texture with a center in the middle, which we call sun. The force of centrality imparting itself to all the parts of this body, produced an immense motion of its component parts thus causing the motion around its axis and in an ellipse. The motion having been modified and differentiated by the differences in porosity of the components of this vast body, appeared in different forces, as in heat, light, magnetism, electricity, etc.,—in all its burning glory. The motion of the circumference of the sun was so great that the superficial parts have detached themselves, and fled far away from its body; the great motion of this

parts overpowered their centrality causing them to move towards the sun again, with a still greater rapidity, and in this way the consistency of the sun became more and more compact. Thus in thousands upon thousands of years the sun as well as its pores got smaller and smaller.

This shrinking of the sun caused an empty space in the absolute essence; the essence at that space again individualized itself into atoms; these combined into molecules and bodies, moving with the usual double motion. In this way appeared many and many small planets around the sun, the nearest of which, by loosing their centrality, moved toward it, (as we see by the very small planets or the falling stars); the remotest small planets from the sun, which were influenced by its velocity, aquired a very great motion thus meeting one another and formed one large planet, called Neptune, which again moved in usual double motion: around its axis and ellipse, and being still influenced by the velocity of the sun. Later, as the sun has shrunk still more,—another empty space—more individualization of the absolute essence, a formation of molecules and bodies, which attained a great motion through the influence of the motion of the sun; these small bodies striking one another, brought

into existense another planet. In the same way the creation of all the rest of the planets, moons and comets of our solar system took place, and this is the case with the whole unlimited universal space, from eternity to eternity, the workings being based upon the truths emanating from and in the regularity of the Absolute Intellect.

ERRATA

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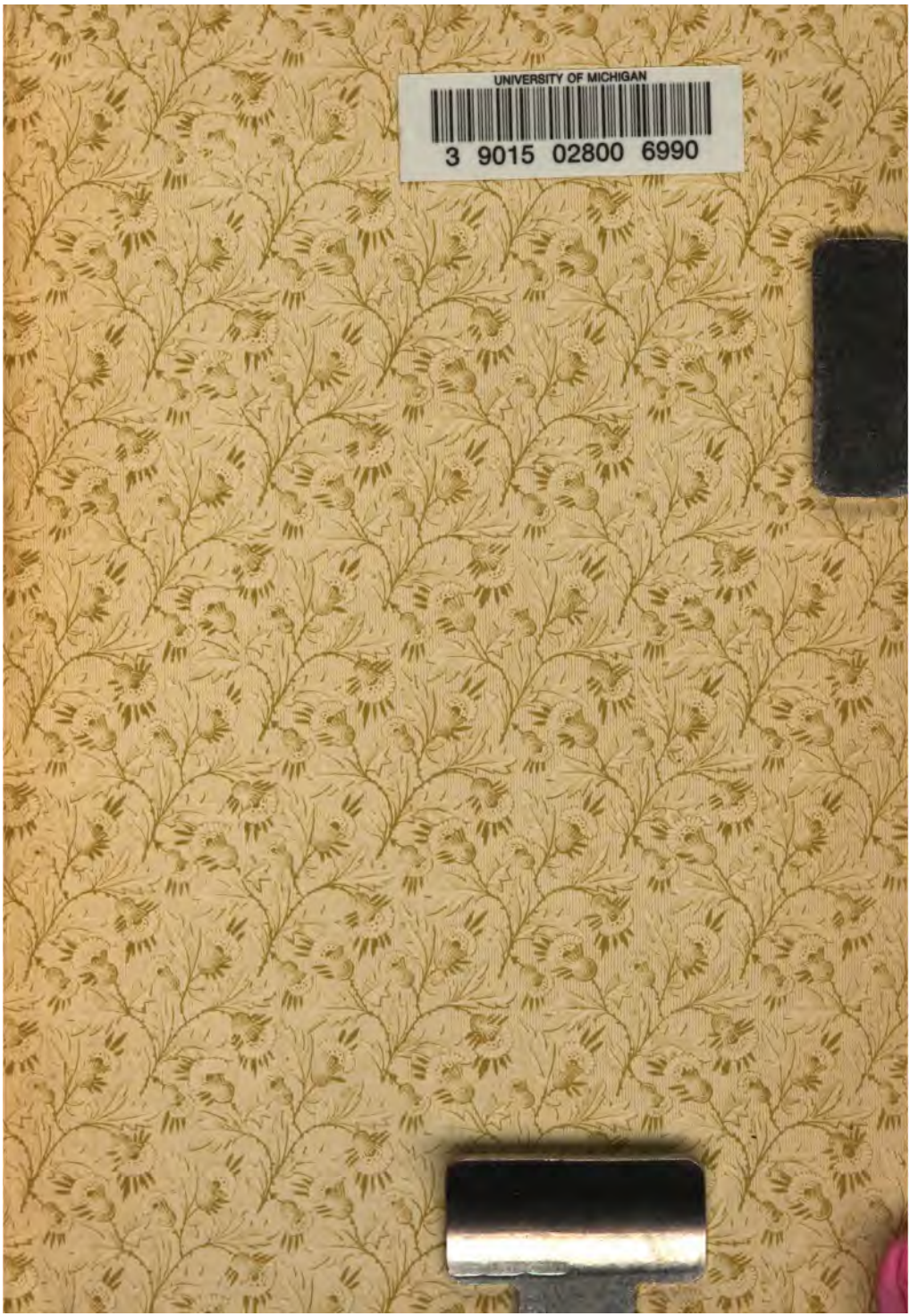
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